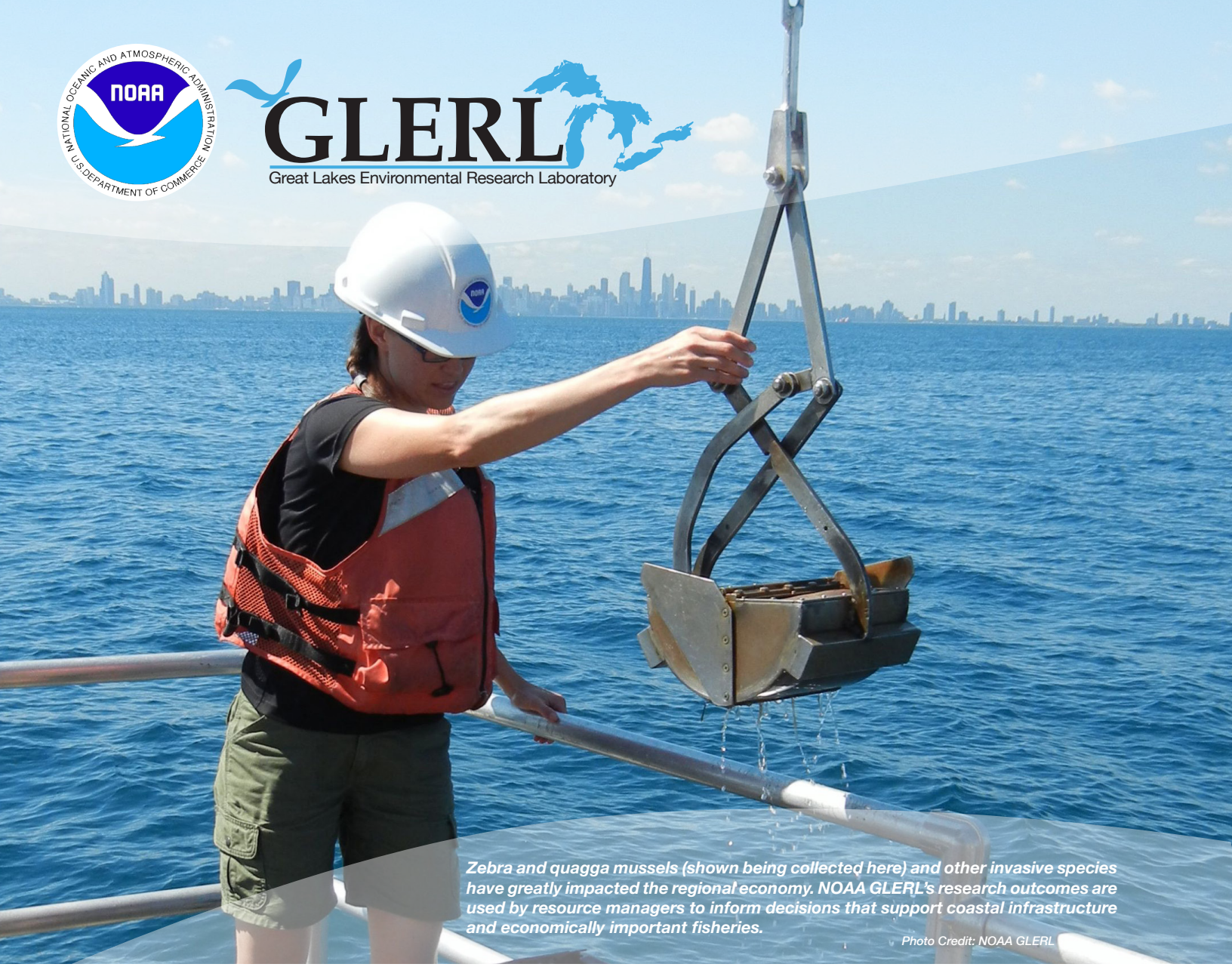
GLERL
Great Lakes Environmental Research Laboratory



Zebra and quagga mussels (shown being collected here) and other invasive species have greatly impacted the regional economy. NOAA GLERL's research outcomes are used by resource managers to inform decisions that support coastal infrastructure and economically important fisheries.

Photo Credit: NOAA GLERL

Invasive Species

The Great Lakes, a highly valued freshwater resource, is renowned for shipping, fishing, recreation, and tourism, as well as a source of high quality water for drinking. The economic and ecological health of the Great Lakes continue to be threatened by the impacts of invasive species. Over 180 nonindigenous species have been reported to have reproducing populations in the Great Lakes basin, i.e. lakes Superior, Michigan, Huron, St. Clair, Erie, Ontario, and their connecting channels and water bodies within their respective drainages.

The economic and ecological health of the Great Lakes continues to be threatened by the impacts of invasive species, including zebra mussels, quagga mussels, and Asian carp. NOAA's Great Lakes Environmental Research Laboratory (GLERL) research on invasive species focuses on understanding how these species impact the Great Lakes ecosystem and interact with other stressors, such as nutrient runoff. These research results inform management decisions that support coastal infrastructure, water dependent industries, fisheries, and recreational use.

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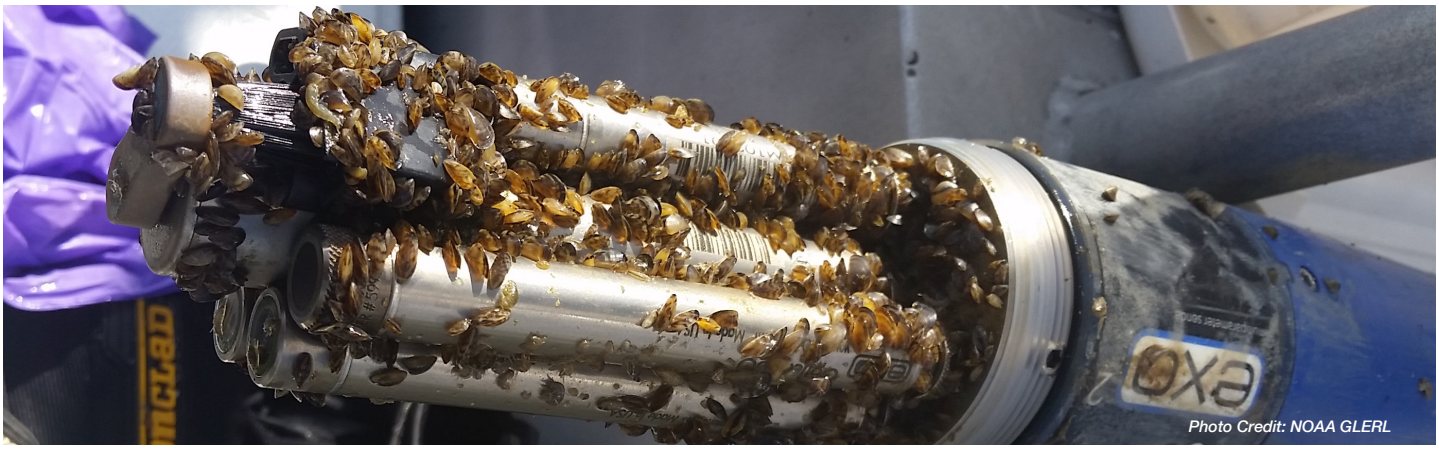

The economic and ecological health of the Great Lakes continues to be threatened by the impacts of invasive species, including zebra mussels, quagga mussels (seen above covering an EXO sonde water quality monitoring sensor), and Asian carp. NOAA GLERL's invasive species research results inform management decisions that support coastal infrastructure, water dependent industries, fisheries, and recreational use.

NOAA GLERL contributes to invasive species research through:

Long-term observations and research

Long-term observations and research produce crucial data sets that inform resource managers how ecosystems change over time, including impacts of invasive species. NOAA GLERL's long-term research approach integrates a core set of long-term observations on biological, chemical, and physical variables along with experiments to explain ecosystem changes. This information establishes a foundation for the development of new concepts, models, and forecasting tools to explore impacts of various stressors, including invasive species. Analysis of historical data provides insight into current decision making and enables us to address emerging issues. To find out more about NOAA GLERL's long-term research on invasive species in the Great Lakes, visit www.glerl.noaa.gov/res/projects/ecoDyn.

Mussel experiments and ecosystem impact research

Since they first invaded the Great Lakes in 1986, zebra and quagga mussels have cost billions of dollars to regional water-dependent businesses (Simberloff, Conservation Biology, 2003). NOAA GLERL's experimental work on mussel feeding, growth, nutrient excretion, and other processes help to explain changes in the food web. The understanding developed in these studies is used by resource managers to inform decisions that support coastal infrastructure and economically important fisheries. To learn more about invasive mussel research outcomes in Lake Michigan, visit www.glerl.noaa.gov/pubs/brochures/dreissenainfographic.png.

Asian carp modeling

Asian carp are fast-growing, aggressive and adaptable fish that are threatening to invade Great Lakes. NOAA GLERL scientists and their partners are developing models to identify potential effects of Asian carp on the food webs in the Great Lakes. These models are being used by federal and state agencies in Asian carp control efforts to minimize impacts on commercial and recreational fishing. To learn more about how an Asian carp invasion would affect fish in Lake Erie, visit www.glerl.noaa.gov/pubs/brochures/AsianCarp.png.

Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS)

NOAA GLERL created the Great Lakes Aquatic Nonindigenous Species Information System (GLANSIS) database to meet the challenges of managing invasive species threats and to inform the public. GLANSIS serves as a critical source of species-specific information by housing a list of established species that are not native to the Great Lakes. GLANSIS also includes a watchlist of species currently not found in the Great Lakes, like Asian carp, but assessed as likely to invade. The database provides valuable information to state, federal, and binational agencies mandated to prevent and manage invasive species. Visit the GLANSIS homepage at www.glerl.noaa.gov/res/Programs/glansis.

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